

Embedded Finance

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ABSTRACT

Embedded finance is the seamless integration of digital banking, along with other financial products and services, into nonfinancial companies' platforms or applications. The technology allows quicker and easier access to financial services, without needing to go through banks. It integrates banking, lending, insurance, and investing services into apps and platforms used by companies outside of the finance sector. It is the placing of a financial product in a nonfinancial customer experience, journey, or platform. It has great potential to empower unbanked groups. It can help foster economic growth. It can open new revenue streams for businesses and enhance customer convenience. It is drastically changing when, where, and how people interact with financial services. This paper examines the various applications of embedded finance.

KEYWORDS: *finance, embedded finance, finance industry*

INTRODUCTION

For centuries, financial services had been a birthright of banks and allied financial institutions. The digitalization of commerce has paved the way for embedded finance, as businesses integrate financial services within their digital platforms for a single customer experience. Whether you are a fintech or a non-fintech business owner, you cannot overlook the rapid integration of banking services into platforms, services, and products from other industries. This is known as embedded finance. Embedded finance offers the user an assortment of user-friendly, flexible, and cost-effective financial services.

Embedded finance refers to the embedding (seamless integration) of financial services into the business processes of non-financial service companies. It is the integration of financial services like lending, payment processing or insurance into nonfinancial businesses' infrastructures without the need to redirect to traditional financial institutions. For example, instead of going to a bank for a loan, customers can use companies like Klarna to obtain financing when purchasing a product online. Fifteen years ago, nearly all financial services for a small business were handled by a local banker. Now, the emergence of

embedded finance has cut through much of the red tape, and business owners are looking to wrap payments and financial services into their software as seamlessly as possible [1].

WHAT IS EMBEDDED FINANCE?

Embedded finance (also known as embedded banking) refers to the integration of a host of banking and other financial services into the apps and services of companies outside of the finance industry. It includes services such as banking, payments, lending, and insurance. Embedded finance lets companies extend financial products to customers without having to establish the same regulatory groundwork as a licensed financial services provider.

Embedded finance has roots stretching back to the 1920s, when Ford established an embedded lending program for car buyers through the Ford Credit Bank. Since then, embedded finance has taken place across a broad spectrum of industries and interfaces [2]. Firms not usually considered financial companies use embedded finance to offer their customers financial services through their own platforms and ecosystems. Figure 1 shows a representation of embedded finance

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[3], while Figure 2 shows the players in the embedded finance ecosystem [3].

Embedded finance enables nonbanking businesses to offer their customers—and additional stakeholders, such as suppliers, partners, and employees—a wide range of financial services, including lending, insurance, and payments, without having to build the underlying financial infrastructure. It marks a shift from traditional banking and fintech models, reducing the number of people who are unbanked or otherwise underserved by the financial sector. It redefines how industries interact with and benefit from financial services. It includes payment processing, lending, invoice finance, insurance, and even investing. They are embedded via APIs (application programming interfaces) – programming code that enables different software to connect and integrate. Embedded finance replaces traditional distribution channels of financial services, i.e., banks.

Embedded banking seamlessly integrates banking services into nonfinancial companies' platforms. It focuses on non-banks integrating financial services using open application programming interfaces (APIs) and infrastructure. Non-financial companies incorporating financial services into their platforms and connecting with fintech and banks through APIs is a significant departure from both the conventional fintech model. Since APIs and smartphones are ubiquitous, consumers can get their banking services wherever they are [4]. Figure 3 compares traditional banking with embedded finance [5].

Here are some common examples of embedded finance in action [6]:

- Online retailers offering financing options like “buy now, pay later” at checkout
- Ride-hailing apps allowing payments directly within the platform
- E-commerce platforms offering protection plans for purchases without redirecting to a separate provider
- Travel booking sites providing the option to add insurance during the checkout process.
- Digital wallets where users store funds and perform transactions without a traditional bank account, often used in mobile payment applications.
- Payroll solutions enable employees to receive their salaries into a digital account, often with features for early access to wages to earnings.

There are three primary categories of companies enabling embedded financial services: technology providers; banking (balance sheet) firms; and

embedded finance distributors. These companies create the digital infrastructure that connects financial institutions and the companies that embed financial services. Figure 4 shows some industries that benefit from embedded financial solution [5].

EXAMPLES OF EMBEDDED FINANCE

An example of embedded finance is when a retailer's app offers a “Buy Now, Pay Later” option at checkout. Figure 5 shows some examples of embedded finance [7]. The following real-world examples provide just a sample of the variety of embedded financial products available in the consumer market [8,9]:

- Tesla is not only an innovator in electric car design and technology. Since becoming a licensed insurer, the company also offers embedded insurance (EI) in a growing number of US states. Tesla offers insurance through its car sales program. It allows them to maximize profits from each customer. This is very convenient for its customers who would otherwise have to pay relatively high rates from traditional insurance providers. They can simply purchase insurance at the point of sale. Tesla's embedded insurance product leverages the vast amount of data cars generate and provides competitive rates, especially for drivers who utilize Tesla's autopilot and safety features. What makes it unique is that its rates are calculated using live data from the vehicle owner.
- Tide now offers its credit product, Credit Flex, to all its members in the United Kingdom. Tide expanded the availability of Credit Flex after seeing the success of a pilot launched in 2023, in which it made the credit product available to 5,000 small- to medium-sized business (SMB) members. Credit Flex is a short-term loan facility that is integrated into the Tide app and allows eligible Tide members to immediately access up to 5,000 pounds in credit. The loans have a four-month term and a 3.3% per month interest rate. When Tide announced in March 2024 that it planned to expand its business financial platform to Germany, it said a growing portion of the country's nearly 3 million small businesses are using digital solutions to manage their finances.
- Uber has also developed an embedded banking ecosystem, offering its drivers instant earnings deposits and specialized debit cards. Uber and Lyft have simplified the payment process by allowing users to complete transactions within the app and integrating apps like PayPal and Venmo. Uber offers embedded lending and payouts to businesses and consumers. To order a car through

Uber's rideshare app, users can add funds to an in-app virtual wallet known as Uber Cash. Uber's embedded finance product leverages the app's historical data to extend timely loyalty rewards to its customers and drivers.

- Lyft is a good example of embedded banking. It offers an in-app checking account and associated debit card exclusively to its drivers. Drivers can use this account to receive earnings instantly, manage funds, and even access cash advances without a separate bank account. The ride-sharing app Lyft offers a debit card to its drivers, thereby enabling them to get instant payment. It also gives them the choice of setting up a separate savings account through its program.
- Klarna technically does not embed financial services. Rather, it is a financial instrument that can be embedded. It is best known for providing merchants with a buy-now-pay-later solution. Embedding it on eCommerce pages increases sales and conversions.
- The Starbucks app is a great example of how embedded payments can benefit the business. It enables customers to order and pay via their phones while earning reward points.
- Citizens Bank, a regional bank in the Northeast, started its embedded-finance journey by providing installment loans to finance iPhone purchases from Apple, which gave it a diversified national consumer lending base. It extended that infrastructure to deliver on-demand installment finance to other e-commerce merchants, and now competes head-to-head with Affirm and other fintechs.
- Cross River Bank, based in New Jersey, has played this role in BNPL and other forms of purchase-linked finance. It built credit underwriting capabilities and risk controls to orchestrate partner credit models that could serve the fast-growing fintech lending niche. The expertise it gained provided Cross River a competitive edge in serving a generation of lending-based fintechs.
- Shopify enabled merchants to accept payments from VISA, MasterCard, and others. The payments are conducted directly through the platform. It avoids third-party payment gateways and their fees. It was the first eCommerce platform to do it.

APPLICATIONS OF EMBEDDED FINANCE

While there are many applications of embedded finance for the consumer market, it is also increasingly an essential part of business-to-business

(B2B) propositions. Some applications of embedded finance are displayed in Figure 6 [3]. Common applications of embedded finance include the following [6,8,10]:

- *Embedded Banking*: Embedded banking allows both financial institutions and companies to offer banking services to their customers. Sometimes, it can also serve as a replacement for the traditional financial offering. Embedded banking implies providing a non-financial institution with a branded checking bank account, enabling it to hold funds, make payments, track expenses, and withdraw earnings seamlessly. The concept which powers up the embedded capabilities here is called open banking. The best thing about it for businesses is that all the functionalities are accessible via their primary platforms and their work interfaces. How embedded banking works is shown in Figure 7 [5].
- *Embedded Payments*: This refers to the simplification of transactions that take place within apps or other online channels so that customers can make transactions without leaving the site or app. Embedded payments are a type of electronic payment that is integrated into a merchant's software application. They integrate the payment process into a platform or app, making transactions more convenient for users. Embedded payments enable seamless payments within apps and platforms by integrating payment infrastructure. Payments were the first financial service to be incorporated into non-financial products. Companies use branded cards to simplify payments. Uber is often cited as an example of embedded payments in a consumer scenario.
- *Embedded Lending*: This offers immediate loan options at the point of sale, enhancing the customer's purchasing power. This is a type of embedded financing that specifically refers to the integration of lending products into non-financial platforms or services. This allows consumers to access credit seamlessly within their existing user journey, often without leaving the platform they are interacting with. Consumers do not need to rush to the banks right now to get a loan. Numerous non-financial institutions have entered the financial sector to allow customers to obtain credit at the time of purchase. It does away with the need for intermediaries, drawn-out procedures, and a ton of paperwork.
- *Embedded Investments*: This approach democratizes and clarifies investing for average consumers by including it in platforms that

customers already use for other financial services. A lot of investors may not know what kinds of investments are safe. But it is an important part of managing money well. Therefore, making integrated investments makes sense because it streamlines the investment process by providing a single platform for investing and money management.

- *Embedded Insurance:* This refers to the practice of including insurance in the cost of a commodity or service. It streamlines the process of purchasing insurance by combining it with the purchase of a product or service. Airlines and online travel companies also provide travel insurance during the booking process, making its purchase more convenient for customers. For example, Tesla provides motor insurance as a component of in-store and online transactions.
- *Embedded Fintech:* While most embedded finance refers to embedding financial services into non-financial business processes, embedded fintech integrates fintech solutions into a financial institution's website, app, or other business processes. Embedded fintech allows financial institutions to offer a broader range of services, engage their customers, and deliver more value. With the rise of embedded fintech, they can embed these offerings in their current products. This lowers the economic risks and allows traditionally slow-moving banking companies to become more nimble and adjust to changing customer needs.
- *Embedded Cards:* An embedded card is a physical or virtual credit or debit card linked to a user's account on a merchant's site or app. This type of card can be used for online and offline purchases. Embedded cards are becoming increasingly popular as they offer many advantages over traditional credit and debit cards. They offer a higher level of security than traditional cards, as they are not subject to the same type of fraud.
- *Embedded Credit:* This describes the integration of credit products into digital platforms that are not financial. As a result, users can apply for, obtain, and repay loans using the platform. A customer could use a mobile app to apply for a loan and then use the same app to make repayments. Embedded credit entails the provision of credit services within digital platforms or applications, allowing users to access financing conveniently.
- *Embedded Wealth:* This refers to the incorporation of wealth management services into other platforms or applications, facilitating investment and financial planning within existing digital ecosystems. The last decade of technological innovation has opened many avenues for wealth building. Many individuals have started building a portfolio to build/increase wealth. But wealth management remains a mystery to many due to its complicated nature. Embedded investment programs intend to change that scenario by offering easy and affordable access to stocks and funds. For example, SoFi offers embedded wealth management services like its Insured Deposit Program.
- *Digital Wallet:* A digital wallet (or e-wallet) is a secure virtual tool where consumers store payment information, such as credit/debit card details, bank account info, and digital currencies. This allows for quick, easy, and secure transactions both online and in-store, eliminating the need for physical cash or cards. Digital wallets are crucial for embedded finance, as they serve as the platform where consumers access a variety of financial services.
- *Banking-As-A-Service (BAAS):* This is the name of an outsourcing model used in embedded payments, whereby banking services are white-labeled for use by non-banking companies. It is not uncommon for embedded finance and banking-as-a-service to be used interchangeably. Embedded finance is "what" is being delivered, while BAAS is the "how" of embedded finance and speaks to the act of extending banking capabilities to end-brands and their customers. While not every embedded finance offering falls under the category of BaaS, all BaaS products are indeed a component of embedded finance. BaaS providers use modern API platforms to offer nonfinancial services brands modular banking solutions, using a licensed bank's regulated infrastructure. BaaS providers enable companies to offer valuable services to their customers without their customers knowing that a third party is involved. The terms "embedded banking" and "banking-as-a-service" are sometimes used interchangeably with "embedded finance." That is because most embedded financial solutions, such as lending and payments, are typically offered by banks.

BENEFITS

There are multiple benefits of embedded finance. Some argue that embedding finance into everyday transactions could democratize finance and expand

access to financial products. Through embedded finance, technology providers make it easier for non-financial companies without the staff or in-house know-how to offer financial services. Embedded finance simplifies transactions for users by integrating financial services directly into non-financial platforms. Other benefits include the following [8]:

- *Convenience:* Customers can complete transactions at relevant stages throughout the purchasing journey. Embedded payments make transactions effortless and time-saving. This is most evident from a customer experience point of view. Nowadays, even the simple task of having to re-enter bank account details repeatedly is seen as an inconvenience that can cause a purchase to be abandoned.
- *Increased Revenue:* The primary benefit of embedded finance is that it makes customer spending easier and, therefore, promotes increased sales and revenue growth. Incorporating financial services into your offerings opens up new revenue streams for your business. Whether it is through transaction fees, interest on loans, or commissions from partnerships with financial institutions, embedded finance provides additional avenues for monetization. Embedded finance features provide new revenue streams along with purchasing opportunities for consumers around the clock. It's also a cheaper form of customer acquisition.
- *Enhanced Customer Experience:* Many traditional financial institutions need to catch up to customer expectations. The ability of nonfinancial service brands to move into the role traditionally held by banks rests on the fact that they can tap into a behavioral response from customers. The best thing about embedded finance is that it streamlines financial processes, offering intuitive, one-stop solutions that increase user satisfaction and retention. Figure 8 shows an excited customer [9].
- *Increased Customer Loyalty:* The prestige and trust that comes with offering innovative financial services is hugely beneficial from a repetitional and brand standpoint. Also, loyalty is hugely important to companies offering both B2B and consumer services. Embedded finance and especially embedded payments can make a difference here by enhancing customer experience.
- *Improved Analytics:* Embedded finance enables improved data collection and analytics. Embedded analytics, as one of the offered embedded finance capabilities, helps to gather user spending and behavior data. It drives business strategies and fosters personalized offerings. The nature of the technology involved means real-time updates and detailed reporting are often available. This can help companies understand their customers' pain points better, implement more impactful marketing, and inform their future development.
- *More Products to Offer:* Embedded finance allows retailers, platforms, SaaS firms, and other businesses to expand their portfolio of products to serve customers better in one place. Providing loans, insurance, and payments builds a "stickier" relationship beyond one-off transactions.
- *Operational Efficiency:* Integrating embedded finance solutions reduces the need for traditional intermediaries, which minimizes added costs and expedites transactions. Embedded finance solutions often come with built-in automation and streamlined processes. Whether it is automating invoicing and payment collection or simplifying loan approval workflows, these efficiencies can free up time and resources, allowing your team to focus on core business activities and innovation.
- *Scalability:* The embedded finance offering should be scalable in terms of product range and number of customers for different regions. Embedded finance solutions are often designed to scale alongside your business. Whether you are a startup experiencing rapid growth or an established enterprise expanding into new markets, these solutions can adapt to your evolving needs. Additionally, many platforms offer modular or customizable features, allowing you to tailor the solution to fit your specific requirements.

Some of these benefits are illustrated in Figure 9 [8].

CHALLENGES

For businesses and consumers, embedded finance involves risks. These include overextending reach, integration complexities, changes to the relevant laws and regulations, and liability for partners' actions. Consumers perceive that the company they trust is trying to get at their wallet in other ways when they simply want to make a purchase. Adopting embedded finance may bring about additional costs related to ensuring data privacy, adhering to stringent financial regulations, and obtaining the necessary licenses. Embedded finance challenges like adhering to regulatory compliance, assuming operational risk, and creating transparent policies remain major concerns

for sponsor banks, end-brands, and BaaS providers. Other challenges include the following [5]:

- *Complexity*: Embedding finance might demand tech restructuring, which can be both time and resource-consuming in some cases, depending on the complexity of the intended functionality. Integrating with one or several financial services partners through APIs and ensuring reliable connections and data sharing across different systems open up additional technology and operational risks.
- *Customer Overload*: Building an all-encompassing financial experience across too many domains too fast can overwhelm customers and erode trust. That can be especially true if promises of seamlessness and convenience are not fulfilled.
- *Loss of Focus*: Perhaps the biggest potential downside of embedded finance is simply losing focus. A company that expands its value proposition with embedded finance and ancillary services risks diluting its competitive advantages.
- *Privacy Concerns*: Companies and financial institutions must have data-sharing agreements in place, while also addressing data handling issues. Collecting your users' financial data for personalized services poses threats if sensitive personal information is compromised through a platform breach. Handling financial transactions on your side implies that you will need to reflect upon security measures to prevent fraud and breaches.
- *Security Concern*: In today's market, balancing customer experience with security and compliance is critical. Financial data must be protected across multiple platforms to prevent identity theft and cyber-attacks. Organizations must have plans in place to prevent data breaches. Not doing so can result in lawsuits and brand reputation.
- *Regulatory Compliance*: It is important to keep user data secure and private, especially when collecting and storing financial data. By embedding regulated financial activities like lending, payments, and investments, platforms inherit compliance rules for customer identification, data usage, privacy protection, transparency disclosures, equity access, and fair lending.
- *Reliance on Third Parties*: Relying on third-party fintechs or banks to provide embedded financial services involves the risk that they could fail to deliver them to customers' satisfaction.
- *Reputation Risk*: If a company's embedded financial service fails or has a security breach, it could damage its reputation, even if the financial service is a small part of its overall business.
- *Trust Erosion*: Customers might decide that these new services, with their promise of greater financial access or ease of use, are less a benefit and more a hassle.
- *Small Banks*: Competing in embedded finance as a small bank can be challenging. Until recently, embedded finance primarily served costly and riskier customer segments. Larger banks that compete in markets that are bounded—by geography, for example—have more opportunities. Because the risk of cannibalization is low outside their core markets, these banks display a greater appetite for trying to reach customers through embedded finance.
- *Partnership*: Partnership is crucial in embedded finance. Consider whether embedded finance is core to your business or if partnering with an expert provider is more beneficial. For businesses unsure where to begin, consulting a partner bank can be invaluable. Established partner banks typically have a curated ecosystem of fintech partnerships and can guide businesses in developing compliant, strategic solutions. These partnerships are crucial in navigating the complexities of embedded finance and bringing safe, effective solutions to the market.

CONCLUSION

Embedded finance is when a non-financial company integrates a financial service into its product. It is a financial product that is placed in a nonfinancial customer experience, journey, or platform. It is the path to frictionless financial services. It is the next big thing in the world of finance. It has game-changing and far-reaching implications for most industries. It is shaking the financial world by changing how financial services are distributed. Although embedded finance is regarded as a nice-to-have feature by many, it will soon become a must-have functionality for any non-fintech platform.

Embedded finance through platforms is still a young and growing part of the fintech space. Although it has created a whirlwind of opportunity and energy in banking, it has also created a lot of confusion. This technology can impact your businesses in a variety of ways and it is an opportunity most organizations do not want to pass on. More information on embedded finance can be found in the books in [11-13].

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Figure 1 A representation embedded finance [3].

Players in the Embedded finance ecosystem

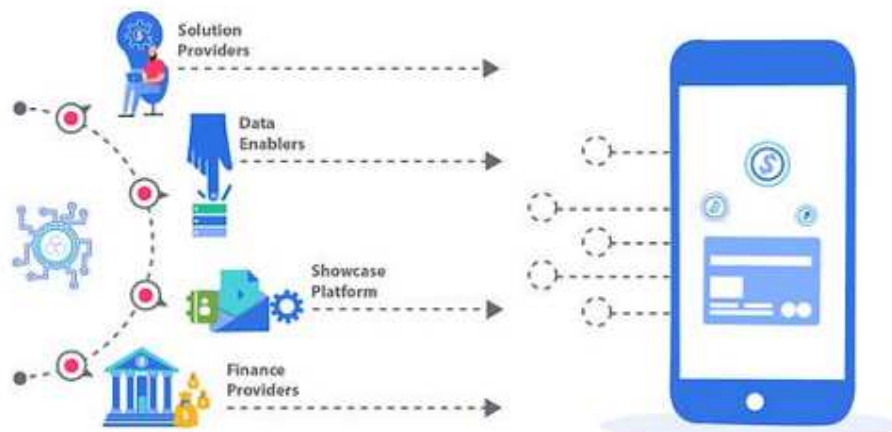


Figure 2 The players in the embedded finance ecosystem [3].

Traditional banking	Embedded finance
Integrated license holder: Manages the financial, regulatory, and technical processes and handles the direct interaction with the customer.	Platforms Aggregate services across providers to offer a network of interconnected solutions
	Enablers Provide technology infrastructure and connectivity capabilities via APIs and banking as a service
	Licence holders Plug offerings into platforms to increase distribution and improve customer retention

Figure 3 Comparing traditional banking with embedded finance [5].

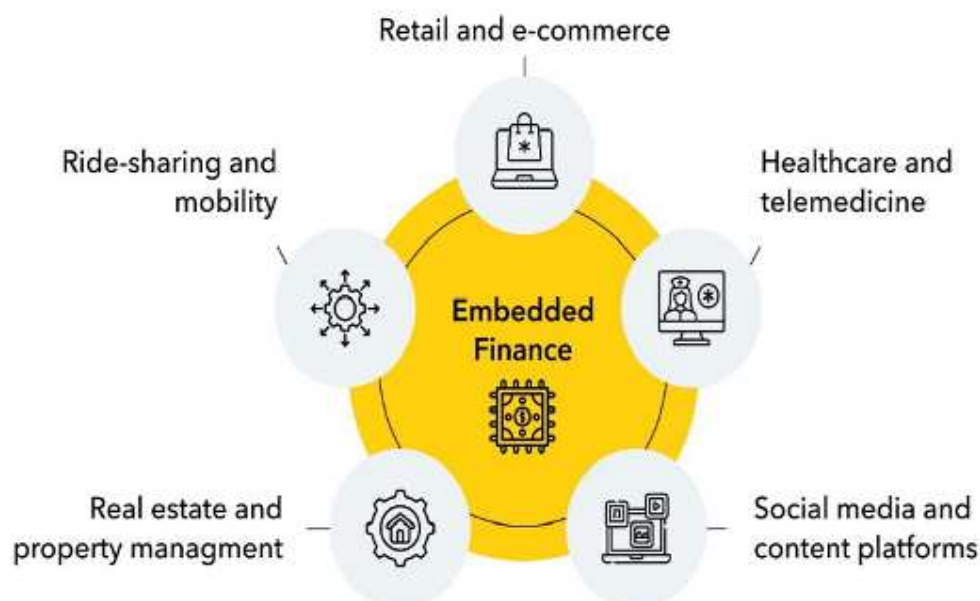


Figure 4 Industries that benefit from embedded financial solution [5].

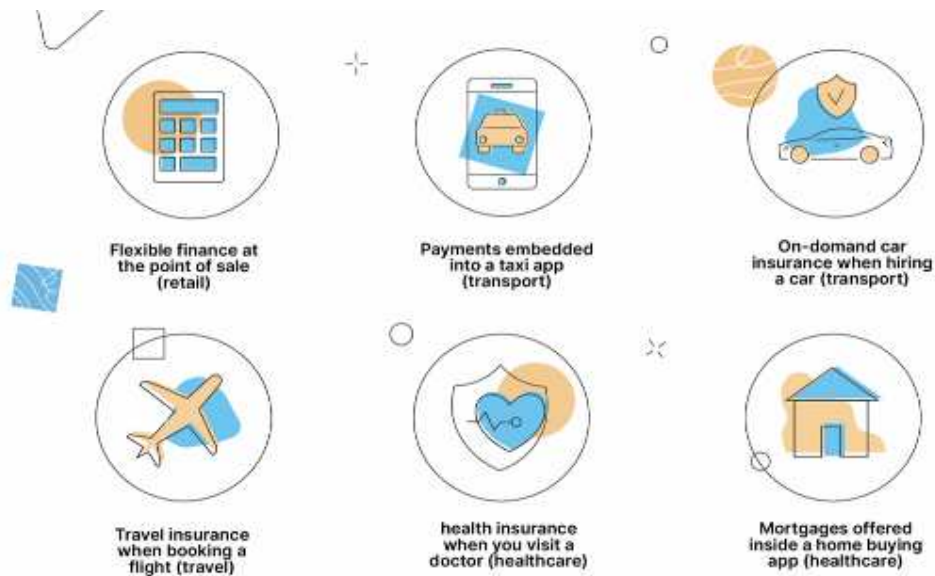


Figure 5 Some examples of embedded finance [7].



Figure 6 Some applications of embedded finance [3].

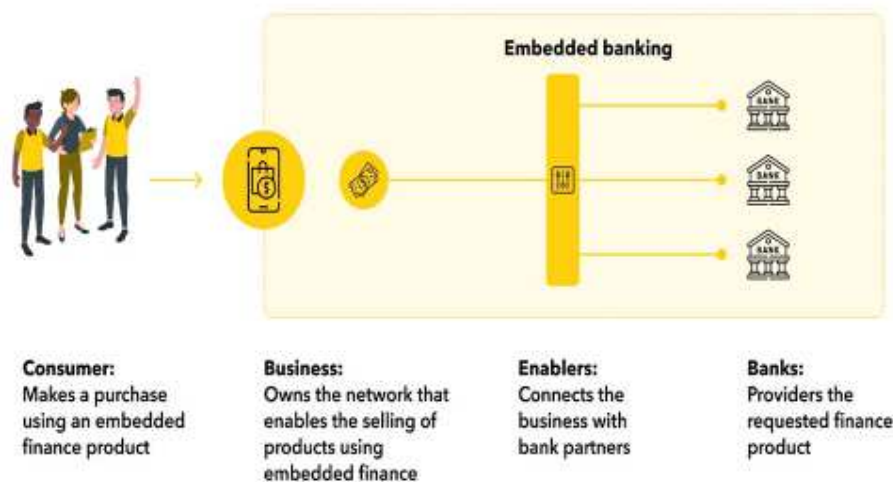


Figure 7 How embedded banking works [5].



Figure 8 An excited customer [9].



Figure 9 Some benefits of embedded finance [8].